

Green M&A Deals and Bidders' Value Creation: The Role of Sustainability in Post-Acquisition Performance

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Abstract

A transition to natural and renewable resources is deemed necessary to preserve the environment and satisfy future energy needs globally. In this context, green economy can be considered a viable alternative paradigm that preserves growth expectations while protecting the earth's ecosystems.

The objective of this study is to investigate whether "green" acquisitions represent a suitable way to support the green economy's growth, given that public subsidies alone do not suffice. To this end, we analyse bidders' post-acquisition performance (return on assets), based on data from the most recent deals, and try to decode whether bidders that "green" themselves find the potential to improve their financial performance and simultaneously enhance their corporate image.

Results confirm that bidders opting for "green" deals can obtain better financial outcomes compared to firms that perform deals in other sectors. This implies that firms may favor such transactions both to foster their external growth and obtain better operating and financial results, while attributing a green identity to their corporate image and protecting the environment. These findings bestow and elevate confidence in the potential of relevant research, raising focus on unexplored Mergers and Acquisitions (M&A) aspects of growing interest among investors worldwide.

Keywords: M&A, CSR, green targets, environmental management, post-deal financial performance

1. Introduction

In the past years there has been a growing global movement towards healthy and sustainable consumption. Such shift makes it crucial to increase the use of natural and renewable resources, in order to reduce CO₂ and other greenhouse gas emissions and protect water and air quality. The growing impact of environmental hurdles may be one, but not necessarily the exclusive, reason for green Mergers and Acquisitions (M&A) transactions increasing. Therefore, it becomes interesting to explore whether firms perform such transactions just because of a moral incentive, to improve their Corporate Social Responsibility (CSR) degree (giving its rising importance in the global context), or to achieve superior financial results as well.

Interestingly enough, the recent global financial crisis is perceived as an opportunity to promote green economy initiatives as part of the stimulation packages put in place to support the economic recovery. If the crisis represents an opportunity, it is also true that transitioning from the traditional energy production system towards a new model of eco-friendly and sustainable economic growth needs to find the necessary financial resources (Wan & Yiu, 2009). A serious restriction upon this transition, however, is imposed by the elevated associated costs. M&A deals, commonly chosen as a mode of external growth, could foster this transition helping firms in this complex, but crucial, reconversion process.

Green growth can be defined as a novel type of economic growth and development that ensures natural assets continue to provide resources and environmental services key for the wellbeing of future generations. Eco-friendly growth combined with opportunities of high rate of return constitute the scenario that investors around the world are interested in materializing.

M&A commonly represents a strategic choice of rapid external growth for firms, which strengthens competitiveness and enhances market share, also diversifying investments into the green sector nowadays. The central question then becomes the following: whether, and how, CSR can affect a firm's economic and financial performance. The integration of CSR into M&A considerations leads to an increase of value created for the

bidder. The rationale is that targeting eco-friendly companies, a bidder may reduce the firm's risk and improve its corporate image. As a matter of fact, during the acquisition process the acquirers appear to evaluate the targets' CSR level and its environmental management just as thoroughly as they do with the rest of the respective due diligence aspects. The latter is due to the fact that target firms with superior sustainable practices may be able to reduce associated information asymmetries and firm specific risk post-acquisition, ensuring an increase of profitability at the same time.

While a great number of studies have examined the impact of M&A transactions on both bidder and target financial performance, moral specificities of the process are much less explored. In this paper, we examine the impact of the most recent M&A activity targeting green firms on bidders' profitability, in order to unlock the effect of environmental responsibility on post-deal financial success.

2. Literature Review

The growing importance environmental management has assumed in the past decades, mainly due to the rapid deterioration of the ecosystem and the various corporate scandals involved, is forcing companies worldwide to improve several dimensions of their performance. Indeed, according to a much-followed school of thought, sustainable practices and environmental commitment are able to enhance corporate image creating moral capital able to reduce the severity of stakeholders' sanctions in case of negative events (Godfrey, 2005). To this regard, the stakeholder theory framework appears useful to decode the relationship between sustainable practices and acquisition performance. According to this theory (Freeman, 1984) a firm can be viewed as a nexus of interdependent relationships among various stakeholders that contribute to its success and should be jointly satisfied. Following Bettinazzi & Zollo (2017), a stakeholder orientation within a firm may affect the acquisition process and its performance as a consequence. This is the underlying idea driving this work, given that firms with superior environmental practices tend to be strongly stakeholder-oriented. Nevertheless, drivers able to explain post-acquisition performance are still unclear because of the steep differences characterizing firms' view of how stakeholder relationships affect them.

M&A first became popular as a research topic in the 1970s but even fifty years later, the study of post-acquisition performance remains one of the most relevant fields of research in corporate finance and strategic management (Bettinazzi & Zollo, 2017; Zollo & Meier, 2008). A lot of studies have been conducted on the aforesaid topics, many of them analysing the effects of M&A transactions on bidders' and targets' performance. Existing literature generally suggests that M&A transactions produce a positive effect on target firms and empirically demonstrates that they create value. More specifically and according to such literature, M&A activity generates positive gains for the target firm's stockholders, mainly due to the bidding firms offering to acquire the target's stock at a higher price than current market value, in order to obtain control (Jensen & Ruback, 1983).

Opposite to the former, there is no unequivocal opinion about the effects of M&A transactions on bidding firms, especially the impact of acquisitions on a firm's financial and operating performance and stock price (King *et al.*, 2004; Papadakis & Thanos, 2010; Zollo & Meier, 2008). According to some authors, growth, on a size level, through M&A and the consequent consolidation of market position lead to value creation for the bidding firm. Cases of value creation are attributable to successful tender offers, which imply the optimal allocation of resources between the participating firms and generate synergistic gains that represent an increase in returns caused by the combined firms. The bidding firm, in particular, can achieve superior performance when it transfers its resources to the target firm, ultimately controlling unique resources (Barney, 1991; Capron & Pistre, 2002). Nevertheless, the majority of studies in the field suggest value destruction is the prevalent result of M&A on the bidders (Jensen & Ruback, 1983; King *et al.*, 2004; Zollo & Meier, 2008).

Literature on post-acquisition performance, at this point, is very wide but lacks consensus around the effect of M&A deals on corporate achievements (Papadakis & Thanos, 2010). Following King *et al.* (2004), acquisition performance is defined as "*the amount of value captured by the acquirer as a result of an acquisition*", a very complex topic due to the disagreement around the validity of the variables employed to measure such performance. As a matter of fact, there are unspecified variables that moderate the post-acquisition performance process highlighting the need for further, more in-depth examination (Zollo & Meier, 2008).

Researchers use different measures of performance to analyse the effect of M&A deals on firm financial results using both market-based (Tobin's Q or stock returns) and accounting measures as return on assets (ROA), return on equity (ROE) or return on sales (ROS), providing different, sometimes even conflicting, results (Bettinazzi & Zollo, 2017; Zollo & Meier, 2008).

Despite the vastity of scientific research on M&A transactions, at present there are very few studies examining

how the new shift towards environmental responsibility affects M&A deals, since it is a relatively recent reality (Chan & Walter, 2014; Eisenbach *et al.*, 2011; Lin & Wei, 2006; Yoo *et al.*, 2011). The concept of business ethics has been studied in various fields of social sciences, as well as information management, marketing or human resources management but its impact on acquisition performance is still unclear among academics and practitioners. The most relevant previous studies concerning the aforementioned topic mainly involve conceptual papers critically reviewing M&A deals and business ethics issues.

In more detail, authors in this field have examined the phenomenon of the green premium, the premium that bidding firms are willing to pay to acquire or merge with a target firm involved in sustainable activities. Such premium is computed as the difference between the offer price for and the market price of the target firm (Chan & Walter, 2014). Firms characterized by higher environmental standards are often viewed as less vulnerable and more promising to create value. Empirical evidence shows that firms implementing a strong environmental management realize positive stock returns, while firms characterized by a weak or absent environmental management present negative stock returns (Jo & Na, 2012). Even less studies have been conducted, however, on the impact of green deals on bidders' post-acquisition performance.

As pointed out by Mirvis (2006), bidders can gain benefits targeting sustainable firms if there is a strategic and cultural fit between the merged firms under a long-term perspective. In light of this, green M&A deals could play a crucial role for acquirers that aim to improve their CSR degree through external growth. Gomes & Marsat (2017) find a positive relationship between CSR commitment and the acquisition premium paid by bidders to perform a deal considered "green". Furthermore, a study of PwC (2012) provides additional support for this notion, finding evidence that CSR aspects of performance on the side of target firms largely affect the bidder's evaluation often leading to discounts in case of poor relative outcomes (Gomes & Marsat, 2017). Furthermore, Lin & Wei (2006) highlight a positive relationship between the target's sustainable efforts, in terms of job protection, justice and employees' security and post-acquisition performance. According to Godfrey (2005) and Godfrey *et al.* (2009), the explanation may be that firms with stronger CSR practices are able to create a form of goodwill that reduces the severity of negative reactions in case of negative events, reducing the firm risk and preserving the firm value for shareholders, as postulated by the insurance-link effect theory. This concept is further corroborated by Bettinazzi & Zollo (2017), who find a positive relationship between stakeholder-oriented companies and acquisition performance.

The aim of this work is to analyse whether green M&A transactions can move past prevalent literature on M&A deals and foster value creation for bidders, in terms of mid-term improvement of their ROA, an accounting ratio sensitive to biases due to changes in the leverage or bargaining power caused by acquisitions (Barkema & Schijven, 2008). We employ a measure of target sustainability to explore the impact it has on the bidder's performance post-acquisition, following Bettinazzi & Zollo (2017), who find support for the positive relationship between stakeholder orientation and acquisition success, and Lin & Wei (2006), who highlight the importance of business ethics issues in order to measure the acquisition's performance. Researchers agree that ROA is one of the most reliable proxies of profitability in this field of research (Cording *et al.*, 2010; King *et al.*, 2004; Papadakis & Thanos, 2010; Zollo & Meier, 2008).

In light of the former, the research question of this study is the following: do green M&A transactions have, *ceteris paribus*, a positive impact on bidders' post-acquisition performance (change in ROA from one year before to two and three years post-acquisition)?

3. Data Collection

In order to understand if bidders targeting green firms are able to get a positive performance, we conduct our research upon the most recent transactions completed in this field. In this section, we describe the data used to build our sample. We consider substantial, in terms of value, transactions that span from 2000 to 2016 in Europe and North America and take relevant data from the Zephyr Bureau van Dijk database. Accounting and financial firm data are originated from the Thomson Reuters Datastream database.

More specifically, the criteria used to select transactions on the Zephyr Bureau van Dijk database are the following:

1. Acquirer: listed company (excluding government-owned companies);
2. Type of deal: Mergers and Acquisitions (M&A);
3. Percentage of final stake: 50.1% at least;
4. Deal status: completed (excluding just announced or rumored deals);

5. Time period: from 1st January 2000 to 31st December 2016;
6. Geographic zone: bidders operating in the enlarged European Union (28 countries) and the North America Free Trade Areas;
7. Deal value: at least 2 billion \$.

The same criteria previously reported are applied on deals considered in order to understand if target firms have a “green” character. The additional criterion applied is the following:

8. Target industry: “green”.

Our initial sample consisted of 171 deals. The original sample has been reduced to account for deals with more than one acquirer and for companies with lack of relevant data, especially for deals completed after 2013, given that for those transactions it was impossible to calculate the change in ROA one year before and three years after the acquisition. After filters were applied, 84 deals, from 2001 to 2013 were suitable to be included in our final sample. In particular, 35 deals (about 42% of the whole sample) have a target clearly operating in the green sector. Table 1 summarizes the geographical composition of the whole sample, while Table 2 provides a classification for deals in terms of the year of completion.

Table 1. Sample composition by geographical area (bidders)

	North America Free Trade Areas	European Union enlarged
Number of deals	47 (56%)	37 (44%)
TOTAL DEALS	84 (100%)	

Source: authors' elaboration.

Table 2. Deal classification by year of completion

Year	Number of deals	Year	Number of deals
2000	-	2007	6
2001	4	2008	4
2002	7	2009	5
2003	1	2010	9
2004	6	2011	7
2005	8	2012	7
2006	11	2013	9
TOTAL DEALS			84

Source: authors' elaboration.

4. Methodology

To investigate about our research hypothesis, we conduct a cross-section analysis on bidders' financial outcomes after they acquire a target company classified “green”. We use the “text search” function since the option “green” is not available as a sector on the Zephyr Bureau van Dijk database (Note 1). In this study, we employ a dummy variable, labelled “green”, in order to comprehend the role of strong environmental practices in post-acquisition bidder performance. The “green” variable assumes a value of 1 if the target company operates in what we define as green sector and a value of 0 if it does not. The rationale behind such choice lies in the fact that green firms can be considered strongly stakeholder-oriented companies and the variable of choice manages to depict the firm's stakeholder orientation degree. Stakeholder theory, in other words, is the theoretical basis connecting post-acquisition performance to the green attributes of an M&A deal. We employ the “green” variable as independent variable in the regression analysis. The “green” variable is the most relevant one in this study since it allows us to understand whether bidders who “green” themselves acquiring target firms operating in the green sector improve their post-acquisition performance.

The dependent variable employed is the post-deal bidder performance. The most popular measurements of post-deal firm performance are: (1) market measures, using the event study method to compute the bidders', or targets', stock market abnormal returns for a short-term analysis and (2) accounting measures, mainly the return on assets (ROA) or the return on equity (ROE), for a mid or long-term perspective (Cording *et al.*, 2010; Zollo & Meier, 2008). These methodologies have two different underlying assumptions: (1) the time frame used (few days for the event study method and some years for the accounting performance measures) and (2) the nature of the available information (public in the case of an event study and both public and private in the case of accounting measures of performance), as pointed out by Cording *et al.* (2010). Following the same authors, the measurement of post-acquisition performance is a “*theoretically complex construct comprised of relatively unrelated dimensions*” and this could be the reason why a wide misalignment among academics and practitioners concerning theory, measurement and findings in this field exists. In this construct, different dimensions can

capture different aspects of the construct's content domain, while many factors simultaneously work. Furthermore, Papadakis & Thanos (2010), point out that the event study method shows that target firms gain positive abnormal return and bidders negative or null post-deals abnormal returns, while accounting measures of performance show the presence of negative post-acquisition achievement for bidders, despite a minor stream of works which highlight positive acquirers' post-acquisition performance.

In light of this, a more reliable methodology to perform a quantitative analysis on the topic should be chosen depending on the specific research question of each task. Three are the main advantages of accounting measures of performance with respect to market-based ones; the accounting proxies: (1) they measure the actual realized performance, (2) they measure different aspects of a firm's profitability and (3) they can explore potential synergies in the long-term perspective. Return on assets (ROA) results to be the most suitable proxy, among accounting measures, to run this kind of analysis given the fact it can capture financial performance under a longer-term perspective necessary for information on CSR performance, especially post-M&A, to settle in the market and get incorporated in the actual performance of the bidder (Bettinazzi & Zollo, 2017; Papadakis & Thanos, 2010; Zollo & Meier, 2008). ROA is calculated as the firm's net income divided by the firm's total assets. To be sure that the dependent variable captures the potential benefits associated to the acquisition, we use the change in ROA from one year prior to two and three years post-acquisition, where year zero is set to be the year each deal is completed (as suggested in Zollo & Singh, 2004).

A set of control variables, widely employed in literature, is also used to perform the econometric analyses. According to Cording *et al.* (2010), among the hundreds of explanatory variables (218) used by researchers in this field, the ones most often used include the bidder and the deal characteristics. The first set of control variables in this paper comprise the acquirer's key financial characteristics: (1) firm size and (2) leverage. On the other hand, the second set of explanatory variables involve the deal's main characteristics: (1) the total consideration, (2) the method of payment, (3) the homogeneity in terms of sector between bidder and target, (4) the cross-border nature.

More in detail, firm size is calculated as the natural logarithm of the firm's total assets. The firm's leverage is calculated as the company's total debt divided by its shareholder's equity, where debt represents all interest bearing and capitalized lease obligations and shareholders' equity implies the sum of preferred stock and common shareholders equity. Leverage is an explanatory variable widely used in financial literature (Vermeulen & Barkema, 2002) aiming to control for capital structure. In reality, following Barkema & Schijven (2008), leverage "*might affect both acquisition behavior and firm performance*".

Coming to the deal's specificities, the natural logarithm of total consideration or deal value is a useful measure to understand if the deal's price draws an impact on the acquirer's post-acquisition performance. The cash variable, instead, is the dummy variable concerning the method of payment used by bidders to perform the acquisition; it assumes a value of 1 if the company uses cash to arrange the deal and 0 if it uses stocks or a mix of cash and stock. The homogeneity variable is represented by a dummy variable that assumes a value of 1 if the bidder and the target operate in the same industry and 0 if this is not the case. Finally, the cross-border variable is represented by a dummy variable that assumes a value of 1 if the bidder and the target have their headquarters in the same country and 0 if not.

We test the research hypothesis applying a cross section Ordinary Least Square (OLS) regression due to the nature of our data. Equations 1 and 2 are used to explain the relationship between green M&A and bidders' post-acquisition performance and are following reported:

$$\Delta ROA3 = \alpha + \beta_1 \text{LnTA} + \beta_2 \text{Lev} + \beta_3 \text{LnDV} + \beta_4 \text{Cash} + \beta_5 \text{Hom} + \beta_6 \text{CB} + \beta_7 \text{Green} + \varepsilon_i \quad (1)$$

$$\Delta ROA2 = \alpha + \beta_1 \text{LnTA} + \beta_2 \text{Lev} + \beta_3 \text{LnDV} + \beta_4 \text{Cash} + \beta_5 \text{Hom} + \beta_6 \text{CB} + \beta_7 \text{Green} + \varepsilon_i \quad (2)$$

Table 3 summarizes all the variables used in this study.

Table 3. Variables description

VARIABLE	SYMBOL	DESCRIPTION
DEPENDENT VARIABLES		
Change in ROA t+3	$\Delta ROA3$	Change of return on assets (ROA) for the acquirer from year -1 to year 3, where year 0 is set to be the deal's completion date.
Change in ROA t+2	$\Delta ROA2$	Change of return on assets (ROA) for the acquirer from year -1 to year 2, where year 0 is set to be the deal's completion date.
INDEPENDENT VARIABLE		
Green	Green	Dummy variable equal to 1 if the target operates in the green sector and 0 if not so.
CONTROL VARIABLES		
Natural logarithm of total assets	LnTA	The measure of firm size as the natural logarithm of total assets.
Leverage	Lev	The firm's leverage calculated as debt divided by equity. Debt represents all interest bearing and capitalized lease obligations. Total shareholders' equity represents the sum of preferred stock and common shareholders equity.
Natural logarithm of deal value	LnDV	Natural logarithm of deal value.
Cash	Cash	Dummy variable equal to 1 if the method of payment is cash and 0 if not so.
Homogeneity	Hom	Dummy variable equal to 1 if bidder and target operate in the same industry and 0 if not so.
Cross-border	CB	Dummy variable equal to 1 if bidder and target have headquarters in the same country and 0 if not so.

Source: authors' elaboration.

5. Analysis of Results

Table 4 provides the descriptive statistics and matrix correlation data regarding the dependent, independent and control variables employed for the analyses. Results show that the correlation coefficients are on average very low (they only reach the threshold of 0.90 between the two dependent variables employed). Thus, it is reasonable to exclude any collinearity bias in the sample. Furthermore, we run a Variance Inflation Factor test (VIF) to make sure that multicollinearity does not affect the dataset, with obtained VIF values (Table 5) considerably within the limit of the critical value of 10. Therefore, it is possible to effectively rule multicollinearity in the database out.

The mean change of ROA at a two and three years after the acquisition for the whole sample is -0.22 and -0.18 respectively (Table 6), confirming previous research that M&A deals seem to destroy value for bidders (King *et al.*, 2004; Zollo & Meier, 2008). However, in order to gain a deeper understanding on whether green deals can create value for bidders, we divide our sample into two subsamples: (1) subsample one is comprised of all deals in which targets operate in the green sector (35 deals), while (2) subsample two is made up of all deals in which targets do not operate in the green sector (49 deals). We then re-compute the mean change of ROA for two and three years post-acquisition for each subsample and test the resulting difference, if any.

Table 4. Descriptive statistics and matrix correlation

	MEAN	SD	$\Delta ROA3$	$\Delta ROA2$	LnTA	Lev	LnDV	Cash	Hom	CB	Green
$\Delta ROA3$	-0.18	2.26	1.00								
$\Delta ROA2$	-0.21	2.21	0.90***	1.00							
LnTA	18.29	1.75	-0.12	-0.08	1.00						
Lev	2.02	3.61	0.03	0.02	0.26**	1.00					
LnDV	15.46	0.61	0.15	0.24**	0.25**	0.02	1.00				
Cash	0.40	0.49	-0.20*	-0.26**	0.0005	0.08	0.01	1.00			
Hom	0.83	0.37	0.003	-0.02	-0.10	0.10	0.16	0.04	1.00		
CB	0.40	0.49	-0.10	-0.14	0.09	-0.02	-0.08	0.06	-0.15	1.00	
Green	0.42	0.50	0.21*	0.24**	0.03	0.13	0.09	-0.11	0.12	-0.16	1.00

Source: authors' elaboration.

Note. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

Initially, the whole sample is tested for its normality with the Shapiro-Wilk test; results show that data is normally distributed ($p < 0.000$). Concerning the change in ROA, companies included in sub-sample one (green deals) appear to be more successful, in terms of profitability, than companies in sub-sample two, with an average $\Delta ROA2$ (ROA change two years after deal completion) equal to 0.38 and an average $\Delta ROA3$ (ROA change three years after deal completion) equal to 0.40 as opposed to an average $\Delta ROA2$ equal to -0.67 and an average $\Delta ROA3$ equal to -0.59 respectively. To be sure that such differences among means are statistically different from

zero, we perform a T-test, justified by the normal distribution of the sample (Pääri *et al.*, 2011). The T-test confirms that differences are statistically significant at 5% and 10% respectively for Δ ROA2 and Δ ROA3. Results are reported in detail in Table 6.

Table 5. Variance Inflation Factor (VIF) test

Δ ROA3				Δ ROA2			
VARIABLE	VIF	VARIABLE	VIF	VARIABLE	VIF	VARIABLE	VIF
LnTA	1.20	Hom	1.10	LnTA	1.19	Hom	1.09
Lev	1.12	CB	1.06	Lev	1.13	CB	1.07
LnDV	1.13	Green	1.07	LnDV	1.13	Green	1.10
Cash	1.03	MEAN VIF	1.10	Cash	1.02	MEAN VIF	1.10

Source: authors' elaboration.

Table 6. Average Δ ROA2 and Δ ROA3 for whole sample, subsample one and subsample two

SAMPLE	Δ ROA2	Δ ROA3
Whole sample	-0.2182 (2.2140)	-0.1850 (2.2594)
Subsample one (green deals) – (A)	0.3804 (1.6563)	0.3954 (2.1865)
Subsample two (other deals) – (B)	-0.6656 (2.4664)	-0.5888 (2.2452)
DIFFERENCE (A-B)	1.0460**	0.9842*

Source: authors' elaboration.

Note. Standard errors are reported in the parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

Results are consistent with the prevailing literature in the field, suggesting that generic M&A deals destroy value for bidders (King *et al.*, 2004; Zollo & Meier, 2008) while enforcing the notion that green deals, different from other deals, can foster bidders' value creation (Eisenbach *et al.*, 2011; Yoo *et al.*, 2001).

To further validate these findings, we perform a cross section OLS regression analysis to test the impact of green deals on bidders' post-acquisition performance. Summarized in Table 7 are the results regarding the two regressions conducted. As Table 7 shows, there is a positive and statistically significant impact of green deals on bidders' post-acquisition performance, measured by the change in bidders' ROA. More in detail, there seems to be a stronger impact of green deals on the two years post-acquisition ROA, both in terms of coefficient magnitude and statistical significance, with respect to the three years post-acquisition ROA (0.8676 significant at 5% and 0.7994 significant at 10% respectively). These findings are consistent with the previous analysis (see Table 6) and with prior studies in post-acquisition performance, highlighting that green investments can foster value creation for acquirers and that acquisition benefits are incorporated with a temporal lag of about two or three years (Cording *et al.*, 2010; Leger & Quach, 2009; Zollo & Singh, 2004) from the deal date.

Table 7. Impact of green deals on Δ ROA3 and Δ ROA2

	Δ ROA2		Δ ROA3	
	Coefficient	Standard error	Coefficient	Standard error
Constant	-11.6376	(7.3729)	-6.4924	(7.0881)
LnTA	-0.2235*	(0.1193)	-0.2572*	(0.1468)
Lev	0.0233	(0.0422)	0.0457	(0.0450)
LnDV	1.0483**	(0.4848)	0.7360*	(0.3971)
Cash	-1.0623**	(0.4892)	-0.8492*	(0.4844)
Hom	-0.6975	(0.4604)	-0.4544	(0.3994)
CB	-0.2822	(0.4663)	-0.1799	(0.4504)
Green	0.8676**	(0.3996)	0.7994*	(0.4510)
Adjusted R ²		0.13		0.06
N. of observations		84		84

Source: authors' elaboration.

Note. Standard errors are in the parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test).

Results tend to support the theory according to which strong environmental practices can improve a firm's financial performance. By targeting firms operating in the green sector, bidder firms are able to improve their corporate image and enhance their financial performance gaining hard to imitate competitive advantages on the way, as postulated by the resource-based view perspective (Barney, 1991; Porter & Kramer, 2006). As a matter of fact, we believe that investments in sustainable development (as green M&A can be considered) should be viewed as a growth opportunity and not as a sacrifice necessary to send a positive message to the market and investors or to merely improve corporate image. As Yamashita *et al.* (1999) posit, "companies' environmental performance is one such source of superior value".

Firms characterized by superior environmental management practices are perceived, both by the market and investors, as able to reduce the impact of potential negative events due to the moral capital created by their environmental-friendly approach (Godfrey 2005; Godfrey *et al.* 2009). This is probably the potential reason why bidders appear willing to pay a larger premium to acquire targets characterized by superior CSR performance. Such bidders can gain benefits in terms of improved sustainability degree and corporate image fitting, on both a strategic and cultural level, with targets in a long-term view. Moreover, as Bettinazzi & Zollo (2017) suggest exploring the acquisition performance phenomenon, stakeholder-oriented firms gain superior financial performance showing the relevance of the stakeholder orientation as an acquisition driver. In the same way, the environmental orientation, as a clear expression of a stakeholder orientation in the target firm, is considered a driver able to impact bidders' post-acquisition performance.

As demonstrated, green investments can foster value creation for bidders and encourage the so discussed green transition of the economy. Indeed, we find support that acquisitions where the target firm appears to adopt a higher level of sustainable engagement and stakeholder orientation generate a more favorable performance, highlighting that investors appreciate responsible firms, in line with previous relevant studies.

In light of all this, the target's sustainability profile can be considered a new variable, among the unspecified variables influencing the complex process of M&A deals, able to explain more in-depth the underlying phenomena (King *et al.*, 2004). Employing a different methodological approach, our results are in accordance with the authors who asserted that the market rewards bidder firms when they "green" themselves targeting environmentally responsible companies (Chan & Walter, 2014; Yamashita *et al.*, 1999; Yoo *et al.*, 2011). We improve such theory providing it with a mid-term perspective analysis and linking it to the stakeholder theory, a novel perspective to view the acquisitions reality.

6. Conclusions

In this study, we investigate bidders' post-acquisition performance with a special focus on the impact that targeting a green firm has on listed bidders' post-acquisition financial performance. The overall sample of 84 deals, completed between January 2000 and December 2016 by American and European acquirers, provides strong evidence of a positive and statistically relevant impact of green deals on bidders' ROA two and three years post-acquisition.

Our findings meet those of several previous studies performed in the M&A field, moving further methodologically and from a temporal point of view. It is important to highlight that the main aim of this work does not in analysing the pure impact of M&A deals on the bidder's performance but rather in the impact of green deals on such measure.

Considering bidders' post-acquisition performance more in-depth, it is possible to note that the impact of green deals on bidders' performance is positive and statistically relevant in both the two timeframes studied. Thus, we can reasonably infer an important positive indication to academics, managers and investors, concerning the sustainability of returns in this sector, fundamental to encourage the green transition that the world is facing as well as trying to attract private investments. Bidders are willing to pay larger acquisition premia to acquire target firms with superior CSR and environmental management given that such targets are considered able to reduce information asymmetries and risk. Furthermore, it is possible, for the first time, to consider environmental concerns as active ethical issues able to generate an important impact on M&A success.

Environmental efforts can effectively be viewed as a driver able to influence the acquisition process and its performance due to the growing importance sustainability has assumed for a series of key stakeholders influencing a firm's survival and thriving. "Greening" yourself through M&A deals can prove to be. At this point, we have to recognize all the potential for future research in the field. It could, without doubt, be interesting to delve deeper into the world of green acquisitions and investigate whether firms perform such deals in order to really pursue a solid sustainable strategy or as a CSR-washing attempt, a merely symbolic initiative (Jahdi & Acikdilli, 2009), hoping that markets and investors will recognize a positive message in their actions. Last, but just as vital, empirical evidence demonstrates that firms characterized by higher CSR commitment realize positive stock returns, while firms characterized by weak or absent environmental management, present negative stock returns (Yamashita *et al.*, 1999). This may be studied as to whether it represents an additional reason as to why investments in green industries are rising.

Future studies may challenge our findings by replicating or improving the methodology applied here, or using alternative methodologies, more detailed firm information and bigger samples.

Finally, we agree with Papadakis & Thanos (2010) that future work should explore new and improved measures

of acquisition performance that take into account the multiple motives for acquisitions trying to provide a commonly accepted measure of post-acquisition performance. All the above gives us great confidence in the vastity of relevant research to be conducted on multiple aspects of green acquisitions, especially given the respective keenness of investors and citizens worldwide.

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Notes

Note 1. The key words, as suggested by Zephyr Bureau van Dijk database are the following: “green” OR “alternative power” OR “biomass” OR “bioenergy” OR “bio energy” OR “bio-energy” OR “biofuel” OR “fuel cell” OR “hydrogen” OR “photovoltaic” OR “renewable energy” OR “reusable energy” OR “re-usable energy” OR “solar” OR “waste to energy” OR “wind power” OR “wind farm” OR “wave power” OR “geothermal” OR “geothermal” OR “hydropower” OR “hydro-power” OR “bio-diesel” OR “biodiesel” OR “energy resource management” OR “electric vehicle” OR “water purification” OR “intelligent power” OR “air quality” OR “energy efficiency” OR “thin film energy” OR “thin-film energy” OR “energy efficiency software” OR “energy storage” OR “battery power” OR “water treatment” OR “waste management” OR “biogas” OR “anaerobic digestion” OR “wastewater” OR “green construction” OR “green buildings” OR “smart meter” OR “smart grid” OR “energy monitoring” OR “marine energy” OR “solar thermal” OR “algae” OR “green energy” OR “cleantech” OR “clean tech” OR “environmental technology” OR “greentech” OR “charging station” OR “green infrastructure” OR “clean energy” OR “tidal power” OR “tidal energy” OR “biodegradable” OR “alternative fuel” among industry potential choices filtering data.

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